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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,791	06/14/2006	Laurent Pain	292393US2PCT	5941
22850 7590 12/12/2007 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER TRAN, BINH X	
			ART UNIT 1792	PAPER NUMBER
			NOTIFICATION DATE 12/12/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/582,791

Applicant(s)

PAIN, LAURENT

Examiner

Binh X. Tran

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) 27-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-30 and 32-52 is/are rejected.
- 7) ☒ Claim(s) 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/11/06: 9/28/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 35-39, 44-45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 2 of claim 35 the phrase "prior to the engraving c)" lacks antecedent basis. Claim 35 indirectly depends on claim 27. In claim 27, applicants disclose that the step c) is an etching step (not "engraving step).

Claims 36-39 are indefinite because they directly or indirectly depends on indefinite claim 35.

Claim 44 recites the limitation "the missing patterns" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 45 is indefinite because it depends on indefinite claim 44.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section

351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 43-45, 48-50 are rejected under 35 U.S.C. 102(e) as being anticipated by Pierrat (US 2004/0081896).

Respect to claim 43, Pierrat discloses a method for repair a defect (i.e. erroneous design) made in a first thin layer (102A), at least partially etched (See Fig 1B) comprising:

depositing a second thin film layer (108 or 201) on the first thin film layer (102A) (See Fig 1C, 2A, paragraph 0031, 0035);

engraving or lithography in the second thin layer (108) as a function of a designed correction (Fig 1D, 1E, 2B, 2C, paragraph 0031-0032, 0036-0037, Fig 5 step 507-508);

etching the first thin film layer through the second thin layer (108A or 201) (See Fig 1E-1F, Fig 2D, paragraph 0033, 0038).

Respect to claim 44, Pierrat disclose the engraving or lithography comprising reproducing missing patterns in the second thin layer (See Fig 1D-1E, Fig 2B-2C).

Respect to claim 45, Pierrat discloses removing the second thin layer (108A) after the etching of the first thin layer through the second thin layer (See Fig 1F, paragraph 0033).

Respect to claims 48-50, Pierrat discloses the lithography is carried by direct writing using UV beam, x-ray (paragraph 0054).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 27-30, 32, 40-42, 46-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mangat et al. (US 2003/0039923) in view of Pierrat (US 2004/0081896) .

Respect to claim 27, Mangat disclose a correction method for correction an erroneous design made in a first thin layer including at least one first engraved sub-layer (55) including the erroneous design and at least one second sub-layer (40) located between a substrate and the first sub-layer (55) (See Fig 4, paragraph 0019-0020), the method comprising:

depositing a second thin layer (70) on the first thin layer (55) (see Fig 5, paragraph 0021);

etching the second sub-layer (40) through the first sub-layer (55) (Fig 6 paragraph 0022).

Mangat fails to disclose engraving or lithography of the second thin layer, as a function of a desired corrections or corrections. In a method for mask repair, Pierrat discloses depositing a second thin film layer (108 or 201) on the first thin film layer (102A) (See Fig 1C, 2A, paragraph 0031, 0035); engraving or lithography in the second thin layer (108) as a function of a designed correction in order to eliminate isolate

defects and significantly reduce the size of the defects proximate to the desired shapes on the mask (Fig 1D, 1E, 2B, 2C, paragraph 0031-0032, 0036-0037, Fig 5 step 507-508, abstract). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Mangat in view of Pierrat by engraving or lithography the second thin film because it helps to eliminate isolate defects and significantly reduce the size of the defects proximate to the desired shapes on the mask.

Respect to claim 28, both Mangat and Pierrat disclose the desired correction including an addition of one or more pattern (Mangat's Fig 5-6, Pierrat's fig 1D-1E). Respect to claim 29, Pierrat discloses one or more patterns are missing and the lithography including reproduce in the second thin layer (108) of the missing patterns (Pierrat's Fig 1D-1E).

Respect to claim 30, Pierrat discloses etching the first sub layer (107) through the second thin layer (108A) after the lithography step (See Fig 1D-1F). The step of etching the second sub-layer has been discussed above under Mangat's reference (Fig 6, paragraph 0022).

Respect to claim 32, both Mangat and Pierrat disclose the correction including removing one or more patterns (Mangat's Fig 5-6; Pierrat's Fig 1E-1F). Respect to claim 40, Mangat discloses Mangat discloses removing the first sub-layer (50/55) after the etching of the second-sublayer (40) through the first layer (Fig 5-6, paragraph 0022). Respect to claim 41, Mangat discloses the first sub-layer (50) is based on a conductive material (i.e. tantalum containing material) and the second sub-layer (40) comprises insulating or semiconductor material (silicon oxynitride) (paragraph 0018). Respect to

claim 42, Mangat discloses the first sub-layer (55) is a sacrificial layer (See fig 5-6, layer 55 is completely removed). Respect to claims 46-47, both Mangat and Pierrat disclose the second thin film layer is a photoresist layer (read on "a dielectric layer" or "resin or polymer layer").

7. Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mangat and Pierrat as applied to claims 27-30, 32, 40-42, 46-47 above, and further in view of Fisch et al. (US 6,777,137).

Respect to claim 33, Mangat and Pierrat fail to disclose the engraving or lithography in the second thin layer leaving one or more blocks filling the patterns in excess. Fisch teaches to fill the excess pattern (124, 224) during lithography or engraving process in order to fix the defect (col. 7-10, Fig 1C-1E, Fig 2B-2E). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Mangat and Pierrat in view of Fisch by filling the patterns in excess because it helps to eliminate or reduce the clear defect.

Respect to claim 34, Mangat and Pierrat teaches the correction including adding one or more missing patterns. Fisch teaches to eliminate one or more patterns in excess (124, 224) using the fill material. It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Mangat and Pierrat in view of Fisch by eliminate one or more other patterns in excess because helps to eliminate or reduce the clear defect.

8. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pierrat as applied to claims 43-45, 48-50 above, and further in view of Liang et al. (US 2005/0109278 A1).

Respect to claim 51, Pierrat fails to disclose the beam being controlled by a digital device associated with a data medium including data relative to the erroneous design and to a desired corrected design. Liang teaches that the beam being control by a system control (i.e. digital device) associated with a data medium (data management module) including data relative to the erroneous design and a desired corrected design (Fig 2, paragraph 0020-0022). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Pierrat in view of Liang by using a digital device associated with a data medium to control the beam because it helps to locate and repair the defect.

9. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pierrat as applied to claims 43-45, 48-50 above, and further in view of Stewart et al. (US 2004/0151991).

Respect to claim 51, Pierrat fails to disclose the beam being controlled by a digital device associated with a data medium including data relative to the erroneous design and to a desired corrected design. Stewart that the beam being control by a system controller (36) (i.e. digital device) associated with a data medium (38) including data relative to the erroneous design and a desired corrected design (Fig 1, fig 3, paragraph 0045-0049). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Pierrat in view of Stewart by using a digital device

associated with a data medium to control the beam because it helps to determine and repair the defect.

10. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mangat and Pierrat as applied to claim 27, above and further in view of Stewart et al. (US 2004/0151,991).

Respect to claim 52, Mangat discloses a first means (laser 110) for producing at least one of lithography beam (Fig 8). However, Mangat and Pierrat fail to disclose a second means and a third means. In an photolithography apparatus, Stewart teaches a second means (38) for processing data relative to an erroneous design (i.e. defect) formed in a thin layer and data relative to desired corrected design, and for producing correction data following such process; and a third means (36 or 45) for controlling the first means (ion beam), from correction data produced by the second means (38) (Fig 1, Fig 3, paragraph 0045-0049). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Mangat and Pierrat in view of Stewart by having a second and third means because it helps to determine the defect and repair the defect.

Allowable Subject Matter

11. Claim 31 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. Claims 35-39 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter: Respect to claim 31, the cited prior arts fail to disclose or suggest removing the second thin layer after the etching (d) of the first sub-layer through the second thin layer and prior to the etching (c) of the second sub-layer through the first sub-layer in combination with all other limitations in the claims. Respect to claims 35-39, the cited prior arts fails to disclose or suggest depositing a third thin layer on the first sub-layer and second lithography in the third thin layer leaving blocks filling the patterns in excess in combination with all other limitation in the claims

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X. Tran whose telephone number is (571) 272-1469. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Binh Tran

Binh X. Tran